

Appl. No. : 10/670,083
Filed : September 23, 2003

REMARKS

In response to the Office Action transmitted December 3, 2007, Applicant respectfully disagrees with the Examiner's rejections. Applicant respectfully requests reconsideration of the application in view of the remarks set forth below.

Discussion of Claim Rejections Under 35 U.S.C. § 103(a)

The Examiner has rejected Claims 1-25 under 35 U.S.C. § 103(a) as being unpatentable over a variety of prior art. Applicant respectfully submits that all pending claims are allowable over the cited prior art as discussed below.

Discussion of Patentability of Independent Claims 1, 14, 16, 18, 19, 21, 23, 24 and 25

At paragraphs 7-12 of the Office Action, the Examiner rejects independent claims 1 and 23 under 35 U.S.C. §103(a) as being unpatentable over Yourlo (U.S. Patent No. 6,201,176, hereinafter "Yourlo") in view of Logan et al. (U.S. Patent No. 7,031,980, hereinafter "Logan"). Applicant respectfully disagrees. Reconsideration and withdrawal of this rejection is respectfully requested in light of the following comments.

The Examiner states that independent claims 1 and 23 are rendered obvious in view of Yourlo with reference to FIG. 11 and the passage on column 9, lines 46-51, in view of Logan with reference to the passage on Column 8, lines 23-52. Specifically, the Examiner states that the passage in Yourlo discloses the feature "a) determining a first representation including a set of peaks and valleys corresponding to maximum and minimum values respectively of at least one characteristic of the audio/music", and the passage in Logan discloses the feature "b) determining a second representation including values representing relative differences between the determined peaks and valleys".

Yourlo is directed to a system and method for querying a music database wherein for each song the system and method of Yourlo constructs a histogram of dominant pitches over a piece of music, column 8, lines 58-65; column 9, lines 46-51; or column 10, lines 19-22. A histogram of dominant pitch is not a representation of music that is comparable to features, such as for example melody, that are obtainable by determining peak and valleys in accordance with claims 1 and 23. There is no disclosure of determining a first representation including a set of peaks and

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valleys corresponding to maximum and minimum values respectively of at least one characteristic of the audio/music.

Logan is directed to a method and apparatus system and method for querying a music database wherein for each song the system and method of Logan constructs a histogram of distance between peaks in the averaged lag vectors for a beat spectrogram, column 8, lines 25-27; or column 10, lines 4-7. The term peak in Logan refers to energy or magnitude of notes, and has nothing to do with pitch as concerned in Yourlo or melody. There is no disclosure of determining a second representation including values representing relative differences between the determined peaks and valleys.

In contrast, the embodiments of the invention as defined by independent claim 1 and 23 require determining two representations, a first representation including a set of peaks and valleys corresponding to maximum and minimum values respectively of at least one characteristic of the audio/music, and a second representation including values representing relative differences between the determined peaks and valleys. Such a method and a system as defined by independent claims 1 and 23 achieve a more accurate and full characteristic representation of the song or music that is simply not achievable by the disclosure and teachings of Yourlo and Logan taken alone or in any combination. The first and second representation requires peak and valley determination which produces a much better match to the music scores and actual music songs and takes into account features such as the melody of songs that is not achievable by the systems or methods disclosed or taught in Yourlo and Logan since only peaks and dominant pitches are considered in the prior art. Including valleys in the determination as required in claims 1 and 23 results in a more accurate representation which can capture features unobtainable in the prior art such as melody of the music or song. Additionally, a person skilled in the art would not be able to arrive at the method or system of the invention defined by independent claims 1 and/or 23 from reading Yourlo or Logan taken alone or in any combination because only peak or dominant features are disclosed and taught. Because this realization and representation of features of the music are more exact in the method and system of the invention defined in independent claims 1 and/or 23 than that disclosed or taught in Yourlo and/or Logan, the actual time required for indexing and retrieval and relative robustness over noise is also improved. Independent Claims 14, 16, 18, 19, 24 and 25 recite similar features as discussed

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above. The same reason applied to Claim 1 and 23 may also be applied to claims 14, 16, 18, 19, 21, 23, 24 and 25.

Therefore, since the cited prior art references do not teach each and every feature of independent claims 1, 14, 16, 18, 19, 21, 23, 24 and 25. Applicant respectfully submits that independent Claims 1 14, 16, 18, 19, 21, 23, 24 and 25 novel and non-obvious and therefore patentable in view of the prior art references taken alone or in any combination. Withdrawal of the rejections is respectfully requested.

Discussion of Patentability of Independent Claim 17

At paragraphs 27-28 of the Office Action, the Examiner rejects claim 17 under 35 U.S.C. §103(a) as being unpatentable over Ghias in view of Schuetze et al. (U.S. Patent Application Publication No. 2003/0074369, hereinafter "Ghias"). Applicant respectfully disagrees. Reconsideration and withdrawal of this rejection is respectfully requested in light of the following comments.

The Examiner has rejected claim 17 in view of the text disclosed in Ghias at page 4, paragraphs 5-11 and Schuetze at [0163]. Applicant respectfully submits that the combination of Ghias and Schuetze fails to teach at least one feature of claim 17 because there is no teaching in the cited prior documents to motivate a person of ordinary skill to combine the teaching of Ghias and Schuetze. Schuetze identifies similarities between documents within a collection of documents and employs select feature vectors that are associated with text and image documents in particular as disclosed in paragraph [0081]. A person of ordinary skill in the art would not arrive at the invention as defined by claim 17 because Schuetze is not related to creating an acoustic input for retrieval of music information in music score information, which is inherently different from retrieval of text or image documents which Schuetze is concerned. Additionally, there is no disclosure or teaching in Ghias or Schuetze of "comparing the second representation of the query with the second representation of each database keyword" and "comparing the histogram of the first representation of the query with the histogram of the first representation of each database keyword." There is no disclosure or teaching in Ghias that would motivate a person of ordinary skill to take any feature from Schuetze so as to both compare the second representation of the query with the second representation of each database keyword and

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compare the histogram of the first representation of the query with the histogram of the first representation of each database keyword. In the absence of such motivation, Applicant respectfully submits that the rejection against claim 17 be withdrawn.

Discussion of Patentability of Independent Claim 20

At paragraphs 33-34 of the Office Action, the Examiner rejects claim 20 under 35 U.S.C. §103(a) as being unpatentable over McNab in view of Yourlo, and further in view of Varne (U.S. Patent No. 6,831,220, hereinafter "Varne"). Applicant respectfully disagrees. Reconsideration and withdrawal of this rejection is respectfully requested in light of the following comments.

The obviousness rejection against claim 20 cannot be sustained and should be withdrawn because the citations raised by the Examiner do not disclose at least one feature of claim 20, specifically, the features "using a curve including a set of digital values to represent the music score information; and using peaks and valleys of the curve so as to index the music score database." Neither Varne or McNab teach that a "curve" is used, nor do they teach that a "curve" includes a set of "digital values". Varne for instance merely discloses "a musical notation system for creating music scores and colored musical instruments", and column 2, lines 41-45, which is entirely irrelevant to the embodiment of the invention as recited in claim 20. Varne fails to teach this feature of claim 20. None of the cited documents teach that of "using peaks and valleys of the curve so as to index the music score database". Whilst the Examiner contends that the reference in McNab at page 7, paragraph 3 discloses this feature, there is no such teaching in McNab, or any other cited document including Yourlo and Logan. McNab discusses the use of "pitch ratios or musical intervals" as the basis of searching a musical score database. However claim 20 states that the music score database is indexed by reference to "peaks and valleys of the curve" which is not disclosed by McNab or any other cited document including Yourlo and Logan.

Applicant further submits that it would not be obvious for a person of ordinary skill in the art to consider combining the methods and systems disclosed in the cited prior art because at least McNab and Varne appear to teach away from each other. Specifically, Varne is directed towards solving the problem of enhancing the process of learning to read musical notation,

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column 1, lines 56-60, and is entirely unrelated to the relevant problem that is sought to be addressed by embodiments of invention and McNab, that is affecting musical information retrieval by humming. Applicant respectfully submits that because these citations reside in distinct technical fields and deal with entirely distinct problems, a person of ordinary skill in the art would not be motivated to combine the citations, and would not consider Varne as being relevant to address the problem that the embodiment of the invention recited in claim 20 resolves. A person of ordinary skill in the art would not be able to arrive at the embodiment of invention as recited by claim 20 from any of the teachings of the cited prior art taken alone or in any combination.

Discussion of Patentability of Independent Claim 22

At paragraphs 37-38 of the Office Action, the Examiner rejects claim 22 under 35 U.S.C. §103(a) as being unpatentable over Yourlo, in view of Ghias, and in further view of Schuetze. Applicant respectfully disagrees. Reconsideration and withdrawal of this rejection is respectfully requested in light of the following comments.

The obviousness rejection against claim 22 cannot be sustained and should be withdrawn because the citations raised by the Examiner do not disclose at least step (a) of claim 22. Whilst Yourlo teaches that a histogram is formed of dominant pitches present in the musical wave form, it does not teach that the histogram is of the features of the distances between each peak/valley and valley/peak. Nor is there any clear suggestion in the citations that a histogram of this nature is to be found. Furthermore, the citations identified by the Examiner also do not teach step (b), as the citations do not disclose or teach “matching the sequence of peak/valley distance values of the query and the peak/valley distance values of the music score keywords.” There is therefore no basis to support the obviousness rejection against claim 22 in the absence of a teaching of this feature. Additionally, Ghias does not provide sufficient disclosure to provide basis for the Examiner’s obviousness rejection of claim 22 since passages in Ghias are stated in non-specific terms. Applicant respectfully submits that there is an entire lack of disclosure or teaching in Ghias or other documents cited by the Examiner as to step (b). Therefore, withdrawal of the obviousness objection against claim 22 is respectfully requested.

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Discussion of Patentability of Dependent Claims 2-13, and 15

Claims 2-13 and 15 depend from base Claims 1 and 14, and further define additional technical features of the present invention. In view of the patentability of their base claims, and in further view of their additional technical features, Applicant respectfully submits that the dependent claims are patentable over the prior art of record. Furthermore, Applicant does not necessarily agree with the characterization of the prior art made by the Examiner in rejecting the dependent claims.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

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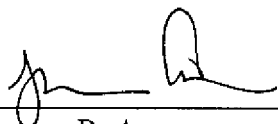
CONCLUSION

In view of Applicant's foregoing amendments and remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Respectfully submitted,

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